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ABSTRACT

The narrative structure of a classroom event describes the order in which the story of the event unfolds. This paper compares the narrative structure of a traditional classroom to that of a communicative classroom. The comparison is made in the form of a drama in which a communicative mathematics spokesperson relates the comparative mathematics method to an elementary school teacher. The drama is presented in three scenes. Scene I provides the setting. Scene II retells the story of the traditional mathematics classroom. The narrative structure of a traditional classroom is: What, When, How, Why, Who, and Where. In the course of the scene these parts are described. The traditional classroom scenario begins with the curriculum to be covered, the What; followed by the sequence in which topics would be introduced, the When; and the instructional methods to communicate the What When, the How. The Why asked by students is usually related to the What to be learned later. Then the student levels are determined to see Who would learn the What, When, and How. Where this takes place is relatively unimportant in the traditional classroom. Scene III retells the story of the communicative classroom. The narrative structure of this classroom is: Where, Who, Why, How, When, and What. The communicative classroom starts out with the context of the problem, the Where. The setting will then build upon the experiences of the students, the Who, presented with the question to be investigated, the Why. The next steps determine the method of investigation, the How, unfolding When, to discover the mathematics to be learned, the What. A chart contrasting the two approaches is provided. (MDH)

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Mathematics in a Literary Mode:
The Narrative Structure of Communicative Classrooms

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Mathematics in a Literary Mode:
The Narrative Structure of Communicative Classrooms

As a way of introducing the notion of narrative structure in the way that I understand it, I shall like to tell two stories. One is characteristic of mathematics teaching in a Traditional Classroom (the *basal series* approach) and the other indicative of mathematics learning in a Communicative Classroom. These two stories have deeply contrasting narrative structures. In telling these two stories and showing their narrative structure I shall use six monosyllabic everyday words.

Narrative Structure

The Narrative Structure of a Traditional Classroom

What, When, How, Why, Who, Where.

The Narrative Structure of a Communicative Classroom Story

Where, Who, Why, How, When, What.

In this structural form it is difficult to hear of see any story. Perhaps all that is apparent is that:

1. Both these stories are the same in length.
2. If the Traditional Story is "forwards" then the Communicative Story is "backwards".

Retelling the Stories

I should now like to retell each story using the narrative structure to determine the story-line. Since the drama metaphor seems appropriate to a communicative setting, permit me to cast these stories in dialogue form.

Cast of Characters

You: A teacher at Atrebla Elementary School
Me: A spokesperson for Communicative Mathematics visiting Atrebla Elementary

Setting

Staff room at Atrebla Elementary

Scene I Coffee #1 - Setting the Scene

You: Can I get you a cup of coffee?

Me: Could you? Black please [settling into a comfortable chesterfield]

You: First of all thanks for taking the time to come to Atrebla. When you said you could

come anytime I didn't think it would be this afternoon!

Me: Usually it takes us longer but you caught me just before lunch and anyway Atrebla is just an hour from my office.

You: Still that's mighty fast. Does communicative math make you fast?

Me: Well actually it does, but that's getting way ahead of the story. Shall we start with the skeletal structures we discussed on the phone?

You: Sure, and then we could add some flesh to the bones. But let me refill your coffee before we begin.

Me: Sounds great.

Scene II: Coffee #2 - Retelling the Traditional Classroom Story

Me: The first W is *What*. The traditional classroom story begins with the *what*, the *what to teach*.

You: What you mean is the curriculum?

Me: Sure, the content objectives which as you know are determined by the state authorities and are laid out in terms of basic mathematical concepts.

You: Yeah I know: Problem Solving, Numeration, Operations, Geometry, Measurement and Data Management, and the like. And if we know what's good for us we had better cover the curriculum.

Me: Right on. You make an important point and it underscores why the *What* comes first. In coming first it means that the curriculum has priority. The traditional story begins with *What*, with the content objectives. These are all taken as "givens".

You: This is sort of like problems that are structured with "The Given" and "The Required". We start with the Given.

Me: And it seems obvious doesn't it?

You: Almost common sense. Now let's add the When.

Me: Right, *What and When*

By bringing in *When* at this point, we simply sequence the *What* .

You: You mean we make a Scope and Sequence chart!

Me: Yeah! In curriculum jargon *What and When* together make a Scope and Sequence chart. It's not surprising then that this chart has been the dominant story-line of all program development in school mathematics - You can't do program development in mathematics without a scope and sequence chart.

You: I hope you're not going say that in The Communicative Classroom we won't need a scope and sequence chart!

Me: You're already anticipating! But as you already know from the skeletal structure, it will come later in the flow and so it won't determine the story-line like it does here.

You: Sorry, but I'm just making a mental note to come back to this point. Let's bring in the *How*. This seems to me to be the nuts and bolts of teaching.

Me: Okay. *What, When and How*.

Once the Scope and Sequence chart is taken as a given (the *What* and *When*) then the next important step is to tell teachers in some detail how to implement this chart on a day to day (lesson to lesson) basis (the *How* or *How to*).

You: Sure. If the *What and When* is **curriculum development,** then the *How* is **curriculum implementation**.

Me: Exactly, and some people call it instruction. And the most direct way of doing this is with the help of a basal series.

You: "I want something (the *What*) I can use (the *How*) on Monday morning (*When*)". I hear teachers saying this everytime they go to an in-service or a conference. If they don't get this, they feel its a waste of time. I know I'm getting ahead of myself again but are you going to say that teachers in the Communicative Classroom will want something quite different?

Me: You be the judge of that when we get there.

You: Okay, now the *What, When, How and Why*

You know if the *What, When and How* are "curriculum and instruction" then the *Why* has got to be rather redundant.

Me: I think you're right. In the Traditional Story the *Why* is generally taken for granted or presumed to be the responsibility of the Program of Studies or textbook writers. If a student asks "Why are we learning this?" the standard response is "You'll need it for next year's work." In other words, the answer to this *Why* question is already taken to be given in the Scope and Sequence chart (the *What* and *When*) - the why is reduced to the *When of the What*. It is in this sense that the *What* and *When* have the greatest priority, powerful enough to account for *why*.

You: But this kind of answer to a *Why* question is surely inadequate. To me *Why* questions are asking for something deeper than sequence. I'm making a mental note of how this will be different in the Communicative Classroom because then the answer will have to be given in terms of the *Who and Where*. Am I correct?

Me: Structurally you have to be, but maybe there's more to it than structure. If we tell a story backwards, maybe it is not just a reversal, but as well the nature of the story might be different. For example, if in a Detective Story the conclusion is already revealed as the story begins, then this story will play itself out quite differently from one that doesn't reveal "whodonit" until the very end. We need a literary theorist!

You: I don't think literary theorists are interested in backwards stories, and maybe curriculum theorists aren't interested in a backwards pedagogy either! [chuckle, chuckle].

Me: You know, I think you're right on. I don't think curriculum theorists are interested in a

backwards pedagogy whether its communicative or not but maybe, just maybe teachers interested in communication might be, and maybe children might be even more interested!

You: You're getting *me* interested. Let's add the *Who*. I'm particularly interested in the *Who* because of my Early Childhood background.

Me: Wonderful. So now we have *What, When, How, Why and Who*

You: Do you mind if I do a little anticipating? I think the *Who* like the *Why* is going to be reduced to the four W's that come before it. Am I right?

Me: May I answer with a question? What led you to your prediction?

You: I was thinking about individualizing instruction. Its a way of trying to overcome differences among children - we individualize as a way of dealing with the uniqueness of children, and in this sense the *Who* is reduced to a *How*.

Me: That's very interesting. Are you saying that in the traditional approach we as teachers aren't so much interested in children for *who* they are but simply as some differences, hopefully not too messy, that can be diagnosed and then treated (the *How*) before they become too aberrant?

You: I guess its my early childhood bias showing through again but I believe that children are interesting because of who they are and that who they are isn't simply something to deal with through some diagnostic procedure. Our society is dominated enough by technological trouble shooting, correcting the "how to" so to speak. As teachers we don't need to reduce children to a series of "technological fixes", of diagnosing our teaching into a high tech sequence of instructional treatments.

Me: Wow! That's even more interesting! Now I think you're saying that the problem of *Who* is reduced to a technical problem of *How* to teach *What* when.

You: You could say that, yes you could. And this brings us to the *Where*.

Me: Yes, the *What, When, How, Why, Who and Where*

You: And now I see the pattern. The *Where*, like the *Who and Why* , is just the continuation of the story-line dominated by the "Ruling Triumverate": *What, When and How* . The *Where* in this story, it seems to me, is literally *anywhere*. It just isn't very important. The *Where* is just a place where the *Who* are often herded into five rows of desks so that they can be taught the *What*. The classroom is the ubiquitous *Where*, and I guess all classrooms can be pretty much the same - just places dominated by the *What, When and How*.

Me: Aren't you being a little harsh? Is the *Where* that trivial in the traditional story? Granted it is the last of the W's, but just anyplace will do?

You: Well I guess I was being a little extreme - my cynicism again. But you know I think I'm justified in being extreme. Because there is so little priority on *Where*, the mathematics children are exposed to is often completely disconnected from any particular setting. If we keep ignoring the *Where*, I predict that any approach to trying to relate mathematics to the real world can only be superficial.

Me: And with that statement I am now sure that we have arrived at the backwards sequence which begins with the *Where*, and will therefore treat *Where* much differently. But first things first - our coffee mugs are empty!

Scene III: Coffee #3 - The Communicative Classroom Story

Me: Yes, the Communicative Story begins with *Where* one learns rather than *What* one is to learn. It begins with the setting much as novels often do. There never was a story that wasn't set in a particular *place*. Indeed, without a place a story is essentially meaningless. Without place, a story cannot be told. A story always happens somewhere in particular and this particular somewhere sets the tone, sets the context, provides the setting for what happens. In the Communicative Classroom, the context is more important than the text.

You: You know, two months ago I would have said "hawg wash"! How can context be more important than text? But I attended a language experience workshop recently and kept hearing that meaning resides in the context, that meaning is in between the lines rather than on the lines. Are you saying its the same in math?

Me: Precisely, if I may use an inappropriate word. Traditionally, with the priority on the *What*, meaning was thought to reside dominantly in the text. By putting the priority on *Where* we are saying that meaning comes dominantly from the context. In the traditional classroom the space between the words was largely empty - a vaccuum. In a communicative classroom the space between the words is pervasively occupied with a sense of place. It is this sense of place that allows children to generate meaning from the words themselves. The language experience philosophy is a severe critique of the "meaning in the words" point of view.

You: But we need more than a critique. Its nice to talk about the setting or the place or *Where* and about how important it is to dwell upon and within a particular place but teachers need more than talk about context or place. How exactly does one does one go about setting up a place?

Me: You used the word *How*.

You: Yeah, I guess I'm getting a bit ahead of the story but what concerns me is that I don't know of many resources that I could use to help me set up the classroom as a particular place. Yes I know there is this stuff about "classroom environments" but most of that stuff is pretty theoretical. For example, I don't know of any math programs or that start with place.

Me: You may be right. If you are it does show that the Communicative Story really hasn't been told in many math classrooms.

You: So how does one go about establishing the Communicative Story Structure in the classroom as a way of teaching mathematics? How does one go about establishing a place?

Me: Suppose one day you were to put on an old trench coat, preferably one that smells as crumpled as it looks, and were to walk into your classroom peering here and there muttering as you hovered close to a window, "There don't appear to be any footprints here;" examining the door knob carefully and whispering, "There don't appear to be any finger prints here;" then looking inquisitively up at the class asking, "Who do you think

I am?" And as the hands shoot up you continue examining the door and exclaim, "Yes, this lock has been tampered with!" Then as you pull out a magnifying glass to observe the door latch more closely you notice that nearly all of the students are now waving their hands widely and shouting exuberantly, "I know. I know!" At this point, and to prolong the ambience you look up and utter a complete inanity, "Let me give you a clue; I am not a dentist." By now children will be standing up just dying to blurt out what they know. The classroom is a sea of excitement, with ships tossing and bobbing on cresting waves of impatient arms. Finally you look at Philina who rarely volunteers to answer anything in class and say, "Philina, who do you think I am." And before you are finished she is shouting, "A detective!" And all the hands come down somewhat disappointed in not having been asked but still excited with the moment. But one boy still has his hand up. You think to yourself somewhat apprehensively, "Maybe I haven't been able to set the scene authentically enough. Adam doesn't think I'm a detective." So you say, "Yes Adam?" And he says "I think you're a spy!"

You: You didn't just make this up did you? It sounds too real.

Me: That's rather perceptive of you. No I didn't just make this up. Three years ago in a grade three class I did exactly what I described here. I'm just *retelling* that story.

You: Tell me some more.

Me: Sure. Can I tell it as a dialogue?

You: Why not? It would be in keeping with "communication".

Me: Okay. I'll use "S" to be Student and "T" for teacher. Remember that this was not my own classroom. I was collaborating with the teacher on a problem solving project but when I first entered the classroom with my old trench coat the children didn't know me from Adam.

S: Are you a real detective?

T: You know I can't really tell you too much. Let me see. I can show you my card.

[I had made a special ID card on the computer. All it had on it was "D. Sawada TPD". The teacher had introduced me as "Dr. Sawada" so the card at least was consistent with what she had said.]

S: What's the "TPD?"

T: I really can't reveal that.

[The students just accepted this. In part, such acceptance was part of setting the scene: Detectives can't be totally open about their work. Parenthetically, the answer to the students question was "Tokyo Police Department" but because I wanted a tone of mystery to hover within the room, I chose not to reveal this at this point. Instead I asked:]

When do detectives do most of their work?

S: At night.

Me: Why at night?

S: Because that's when crimes are committed.

T: Sounds reasonable. The detectives have to be good at detecting at night when its too dark to see well. If it is really really dark, how can a detective see?

S: Use your flashlight.

T: That's an idea.

S1: But if you use a flashlight you will be a sitting duck!

T: You've got a point there.

S: Maybe you could use your hands, and feel your way.

T: Yes, you could use your hands to "see"! A terrific idea. Guess what I have in these bags?

[In preparation for this lesson I had made a selection of wooden geometric solids: prisms, cones, ellipsoids, etc. I had selected two identical copies of each of six different solids and placed one member of each pair in an individual cloth bag. I now place the other six solids on the table at the front of the room and asked:]

In each bag is one of these (pointing to the blocks) but you can't see which one *with your eyes*.

S: But we could see it with our hands!

T: What do you mean "you can see with your hands?"

S: We can *feel* it with our hands.

[Each student then came up and felt a bag, then selected one of the solids on the table, then pulled the solid out of the bag to verify his vision. I could continue with this story but perhaps I've said enough to set the scene.]

You: I can see that in setting the place you have also smuggled in some geometry.

Me: Yes, but the kids weren't thinking particularly about the geometry. Yet they were learning about geometry. At this point the geometry wasn't important. Setting the scene was important - establishing the *Where*. Over the next few lessons, the classroom was slowly transformed into a Detective Agency with each student a detective. At the close of the lesson I congratulated all the children for being able to "see" with their hands and therefore having the promise of becoming real detectives.

You: Sorry for being skeptical but did *all* of the children succeed in seeing with their hands?

Me: I was surprised as well, particularly because three of the children were "Special Ed"

students who were mainstreamed for mathematics. Children are pretty good at seeing with the hands.

You: I think I can see how a detective agency would be a particular place where children could learn mathematics. Detectives solve mysteries; in math class children solve problems. Solving cases and solving problems aren't very different. Being a detective and being a problem solver are quite compatible.

Me: Yes, and a detective agency is just one such place. There are many other places that could be established in the classroom as well. For example a Collector's Club where children are collecting various items such as hockey cards, sea shells, post cards, you name it - whatever they collect; or a trading post or a space station, or a firehall, and so on.

You: I think I'm beginning to see what these settings are. Each is a laying out of a place: the toy factory, the detective agency, the firehall, the collectors club, the press room, the trading post, the space lab, the animal farm. These are places (the *Where*) where mathematics (the *What*) occurs in a real way, or should I say a natural way?

Me: In a culturally meaningful way. The what (the mathematics) arises naturally in a contextually meaningful way. For example, at a toy factory toys have to be packaged and shipped. How do you package toys? Do you box them in 3 rows of 4? Or 2 rows of 5? And what if you stack these boxes into crates. How do you arrange the boxes in the crates? How many in a layer? How many layers of boxes in a crate? And how should we stack the crates on the truck? How many boxes can a truck hold? Mathematics galore and it all arises in "real" form in the toy factory.

You: But I think you have to be careful here. You're using the word "natural" or "naturally" as if the classroom, when set up as a detective agency or toy factory, is a natural setting in school. Certainly it isn't "real", it is by no means a real detective agency. I could even say that it is contrived. It has to be contrived. Detective agencies don't exist naturally in schools!

Me: I think you're onto something very important here. Believe it or not I concur with everything you just said. I'm concurring not just to sound positive, but because there always is something very artificial about school, and more importantly something very artificial about mathematics. Both institutions - if I may also refer to mathematics as an institution - require an attitude of "Let's Pretend". Schooling is just one big "Let's Pretend" - we take kids out of their daily life and force them to come to school from 8 30 to 4 00 five days a week. What they encounter in school is one big "If" - If all that we do in school is valid and important, then it will be useful for students sometime in the future. Often however this usefulness doesn't happen and the schools are then criticized as being "out of touch with reality" or "irrelevant".

You: It strikes me that what you are calling the "If" is simply the curriculum or the *What and When* of traditional schooling.

Me: Precisely, and when the "If" is found wanting or weak we don't question the traditional classroom structure, we merely fiddle with the *What and When*. Now mathematics is also one big If. The "If" part is usually called "The Premises" and the "Then" part the "Conclusion". Even the advice we may give students in problem solving takes on this form: "First determine what is given (the "If"), then try to connect this to what's required (the conclusion). Mathematics is one big If-Then sequence written large (Axioms giving rise to Theorems). So we might say that Mathematics is the "Land of

If". A very contrived Land of If. It is contrived by the fact that any If is okay as long as it leads to interesting results. So a great mathematician is one who can contrive powerful Ifs.

You: If I understand what you're saying, then in the Communicative Classroom, places such as the Toy Factory are each a Land of If.

Me: Yes and hopefully each is also a *powerful* Land of If, powerful in that each generates in a natural way rich mathematical results.They are contrived, highly contrived. If I were the teacher I would encourage students to participate in all ways possible in setting up this contrivance. But as in mathematics, and this I believe is the important point, once the contrivance is set up, what happens within this context is the creation of mathematics in a way that is natural to the contrivance.

You: Your last phrase strikes me as saying it all: "natural to the contrivance". Actually in any walk of life, be it business, politics or schooling, whatever context we set up will also be in some way contrived; otherwise we would not have to "set it up". But if I understand what you said, within this contrivance, within this game, some very natural kind of things can happen; things that are natural to our little game.

Me: I like your metaphor of a game. It is very much like playing a game, and if you are going to be a good player, then you must understand the rules very well. It would be even better if you could participate in designing the rules, in setting up the game. Then not only would you understand the game better, you would probably be a dedicated and skilled player as well.

You: This sounds pretty good to me but if mathematics is in the game or in the land, how do we get it out?

Me: That again is a *How* question and why don't we consider it when we get to the *How* part of the story.

You: Sorry again. Let me raise a different concern.

Me: By all means.

You: The NCTM *Standards* place a strong emphasis on integration, continuity, real world connections as well as the use of manipulatives. Now it seems to me that all of these concerns were problematic in the traditional approach and so we now have a priority on them again (or should I say "still"). Now what seems so exciting to me is that by placing a priority on *Where* many of these problems just disappear.

Me: Is that right?

You: Sure. Consider integration. We talk about integrating math with science, or language with social studies and so on. The way we do it is to integrate the various *What's*. We begin by looking for common *Themes* or common topics. In this sense, Themes are a way of ntegrating content, of integrating the what of the traditional classroom structure. In contrast to this, if we focus first on *Where* then we find the stuff already together *in situ*, or if you wish, together in the "If". For example, in a Trading Post, social studies and mathematics would already be there together as would be language arts. We literally don't have to do any integration of subject matter. It's already together in the setting.

Me: How about another example?

You: We have only spent a few minutes talking about the Toy Factory but I can already see how the kids are going to get right in there as if they were operating a toy factory themselves, making decisions about what to construct, how many to construct, how to package the goods, marketing them, preparing advertising, receiving orders, shipping quantities, receiving complaints, replying to complaints, filling out order slips, and on and on. The language arts and social studies are already there.

Me: This is interesting, because if you're right, then the problem of integration is just an artifact, an artifact of having begun with the *What*, and then developing and packaging each *what* (subject matter) separately. So separately in fact that integration is now seen as a big problem. Using Themes is then a solution to this problem. But we shouldn't lose sight of the fact that this problem is strictly an artifact of the Traditional Classroom Structure. So a focus on *Where* is quite different from a focus on *Themes*.

You: And what holds true for integration also holds true for continuity and connectedness with the real world. Its already together in the situation, in the context. Its only in the *What* is frozen in *text*, that the *what* is discontinuous or separated from experience. In the settings of a Space Lab or Trading Post or Animal Farm, experiences are continuous and situated in "real world" settings contrived though they may be at first.

Me: Well I guess that's enough extolling the virtues of *Where*. Lets bring in the *Who*.

You: With all this integration and continuity I'm fully expecting that it will be difficult to separate the *Who* from the *Where*.

Me: Hey, that sounds interesting! In the Communicative Classroom, the nature of the *Where* - The nature of the place - is a context which is taken to be jointly created by students and teacher. Introductory teaching activities would begin with "scene setting", with activities that draw upon *children's experience* with "911", detective stories, "StarTrek" etc. as a way of developing such a place in the classroom. Since the context is what is brought forth by children, it is automatically relevant to or grounded in their experience. By starting with *Where*, we already bring forth relevance and meaningfulness as properties of the setting in which learning will take place. Traditionally, by starting with *What*, rather than *Where and Who*, the problem of making the *What* meaningful and relevant was always acute. We tried to "make" the activities interesting by making them colorful or fast paced and so on. In a Communicative Classroom we set this up right at the beginning by focussing first on a place that is developed out of children's everyday experience whether that be watching detective movies on TV, reading mystery novels, or reading about police work in the newspapers. As this continues, the place becomes a community of children learning mathematics (the *What*).

You: So what you're saying is that a Communicative Classroom is as much a *place* created with and through children's experiences as it is a program?

Me: Yes, a place which is as much as anything created out of children's experience in the world. A place is where people are. That's why we begin with *Where and Who* so that the classroom can become a particular kind of place that contextualizes the very learning that creates it. In constructing the place children learn mathematics, or more generally, *in constructing the context, they learn the text.*

You: Hey, I like that last turn of phrase. It says it so compactly: In constructing the context they learn the text. But the Communicative Story isn't all context is it? Children are also doing something in the classroom. How does this kind of doing differ from the

usual activity in a normal classroom?

Me: Timely question. It moves us right into the *Why*.

You: How so?

Me: You've already put your finger on it in the way you've asked the question: The activity in a *place* is quite different from the traditional activity in a math classroom. Consider the usual scenario - the child is given a task to do. The activity could be done any*where* - at home, in a group with other children, alone at a desk, after school during detention. The place in which the activity is done is not stressed. What is stressed is that it is important to have activities of a concrete nature, as well as those involving the pictorial and symbolic modes. This is the important principle.

You: Yes but how does context change the action?

Me: In a Communicative Classroom I would spend a lot of time setting the scene - establishing the nature of the place. The classroom would become a detective agency. Activity in the classroom now becomes guided by the sheer fact that it happens in a detective agency. Children become detectives. Their *actions* are actions of a detective trying to solve cases. The actions of a detective are quite different from those of a barber or sales lady or principal. A question such as, "*Why* are you doing this" or "*Why* is it important to do this" are all answerable within the general frame of being a detective. For example, if a child were to ask, "Why do I need to write up this problem?" the chief detective (perhaps the teacher) might say, "When a detective is solving a case does he keep a record? Why does he keep a record? Is it important to keep a record? Does he need to file a report?" At this point the class might diverge into a discussion of what kind of "File" a detective keeps on a case. What goes into the file? They may even visit the local Police Station and spend sometime observing not only what sort of reports are routinely kept but the particular format of the report.

You: So what you're saying is that certain kinds of activity are *indigenous to the place* and it is this indigenousness which makes the activity different from ordinary activity in the classroom?

Me: Precisely, and I like your word "indigenous". Indigenous activity is quite the opposite of activity imposed from the outside in an arbitrary way. It is activity that arises naturally and therefore appropriately in the place. In a Collector's Club the action of *exchanging* or *trading* would be indigenous as would be *displaying* and *safekeeping*. Activity indigenous to a Trading Post would consist of *bartering, stockpiling, packing, visiting*, and so on.

You: I just thought of another example of a *Why* question that would be quite different. I like children to be careful and organized when they work and I find it difficult to get children to appreciate why. One of my weaknessess is to become impatient when a child does sloppy work. Now instead of becoming irritated I can simply ask, "Why do detectives need to be careful when they gather evidence?"

Me: An excellent example, and as detectives, children through discussion can generate answers to this question. However, trying to teach a student to be careful, or mindful of the need to be careful is like pulling teeth. Why should they care about being careful as long as they get the answer?. In the context of a detective agency though, being careful is *endemic* to the place. Otherwise your case may be tossed out of court on a technicality. Trying to *impose* carefulness would be next to impossible, yet in the

Traditional Story, this is what we are often forced to do.

You: Yes I suppose so. And returning to the Trading Post for a moment, it seems to me that setting an authentic scene for a trading post would involve activities which would normally be called Social Studies.

Me: And language arts as well, particularly stories of early settlements such as Fort Worth or Fort Saskatchewan or Fort William as well as communication between the Chief Factor and company headquarters and with trappers too.

You: This would be a kind of integration that would happen naturally as an integral part of setting up the *place* and running it. In fact it is in the running of the place that the *How* part of the story takes place. And if the class were to become a Space Lab, there would be a natural integration with science. This could get exciting! Particularly from the kids' point of view.

Me: I think all this leads naturally into the *How*. In a Communicative Classroom the question of *how* is not so much a question of "how to teach" as it is a question of "how to be a detective" or a "fireman" or "space traveller". That is, the place determines the how. The *How is guided by the Where, Who and Why*. In a strong sense, questions of *How* become questions of *Learning* moreso than those of *teaching:* The teacher becomes a learner along with the children as both participate in running the place as you said earlier. Moreover, these questions of how to learn find their answers in actions and activity endemic to the place. Criteria of what is appropriate are already in the place. Authority alone is never appropriate. We ask "What would a detective do now?" rather than "Here is the right way to do it. Now do it carefully."

You: And now it finally seems clear to me that in doing the *How* (running the place) the children learn the *What*, the mathematics content embedded in the place.

Me: That's the hope. In a Communicative Classroom, the content (mathematics) is learned by doing things (The *How*) that are indigenous to the place (The *Where)* Mathematics is not so much taught as it arises in the place through the actions and activities that occur naturally there. Parenthetically, it occurs to me that I could say *their* for there because what occurs there is *theirs*..

You: My cynicism is asserting itself again. You used the word hope, and while I like to be hopeful, when it comes to "covering the curriculum" hope just isn't enough.

Me: Your point is well taken. I take the position that just because the *What* occurs last in the sequence, this doesn't mean that it has no priority: Educational authorities and parents too would hang us both out to dry if we were to ignore or belittle the *What*. Nevertheless, in a Communicative Classroom covering the curriculum doesn't happen because the teacher teaches each and every objective. It happens because the selection of places provides a set of situations in which mathematics (the *What*) is encountered in contextually meaningful ways as activity that solves problems arising in such settings. In planning a selection of places we would have to be extra careful in ensuring that all of the objectives as detailed in the syllabus would occur *in situ*.

You: What I would dearly love to see is for someone to develop a set of settings or places that would cover the curriculum at each grade level. That would be invaluable if ever I were to live out the Communicative Story in my classroom.

Me: Why don't you and I develop such a set of places? Do you think other teachers would

be interested in helping?

You: I for one would be. It would be the equivalent to what a Traditional teacher is looking for when she goes to a conference as I mentioned earlier. When a Communicative teacher goes conferencing, I do believe she would be interested in such a set of resources based on place.

Me: I believe you may be right. But did you notice that we skipped over the *When?*

You: We did didn't we! Maybe this means that the *When* is not particularly important in a communicative classroom?

Me: Given that it comes next to last in the narrative structure one might presume so. But just as the *HOW* is connected to the place so is *When*, but again in a special way. In a communicative classroom the *When* is not the ordering of the content objectives. Rather it is the **Story-line** of the events happening in the place. For example, the cases solved by the detectives may each be focused on a content objective but they may together form a sequence of unfolding events in an overall story-line that culminates in the solving of a grand mystery.

You: I like this! The *When* becomes a story-line that brings a natural continuity to the events in the classroom. Rather than doing the next two pages from the math text each day, children are involved in working out an overall plot such as planning a space journey to find life in the outer galaxy. The individual tasks they work on all lead to this ongoing project.

Me: Exactly. It's like having a story within a story. Or a story-line within a narrative structure.

You: That's nice. I've often wondered how "story" is different from "narrative" and I think we have nicely distinguished story from narrative structure.

Me: Well, at least to our satisfaction.

You I think *When* has caught up with me: I'm afraid I have to get back to my classroom now. I have a sub there at the moment but I want to be there to see the children off. There goes the bell. Perhaps we can finish these stories at another time. Actually, I think the story-line has become clear enough for me to finish myself! Still, could you leave me with a parting summary?

You: I'll give it my best shot in fifty words or less. In a Communicative Classroom, the *Where* and *Who* together with the *Why* and *How* jointly become the medium, *a Place* in which and through which the *What* is learned within an overall story-line that brings continuity to learning We don't begin by teaching the *what* and then try to be sure all students are paying attention and staying on task. Rather, with the help of students, we begin to build a place in which the *what* will arise spontaneously, and to be on task is simply to do what is appropriate to the ongoing story being told (lived) in the place. Since each student is an original settler and creator of the place, appropriateness is something indigenous to their understanding. In a sense, each student is a "signing member" of the constitution, the aboriginals of the "Land of Mathematics".

Let me leave a chart with you. It says it in less than 50 words.

Traditional		Communicative	
What	(Program of Studies)	Where	(classroom)
When	(Scope & Sequence Chart)	Who	(children as aboriginals)
How	(instruction)	Why	(appropriate to setting)
Why	(fits scope & sequence)	How	(indigenous action)
Who	(children)	When	(As it happens in a story-line)
Where	(classroom)	What	(Mathematical Literacy and Syllabus too)

One sequence is very top-down and the other is very bottom-up. Communication thrives in a natural way only if it supports itself from the bottom-up.

Thanks for being so patient with my two stories. And if after all this you are interested in participating with me in developing resources for constructing places so that the Communicative Narrative Structure can be lived as well as told in each mathematics classroom, please drop me a note. Here's my address:

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You: I just might do that.